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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

TECH CENTER 1600/2900

Applicant's or agent's file reference 1631.100	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 99/ 31273	International filing date (day/month/year) 30/12/1999	(Earliest) Priority Date (day/month/year) 31/12/1998
Applicant CHIRON CORPORATION		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☒ contained in the international application in written form.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☒ **Certain claims were found unsearchable** (See Box I)

3. ☒ **Unity of invention is lacking** (see Box II)

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant

☐ because the applicant failed to suggest a figure

☐ because this figure better characterizes the invention

☒ None of the figures

INTERNATIONAL SEARCH REPORT

International application No
PCT/US 99/31273**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 49-66 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-10, 41, 42,
46 and 47 (all completely); 24-40 and 49-66 (all
partly)

Expression cassette encoding an HIV gag polypeptide, cells comprising said cassette, uses thereof to produce polypeptides or virus-like particles, methods of treating a subject using said cassette.

2. Claims: 11-23, 44,
45 and 48 (all completely); 24-40 and 49-66 (all
partly)

As subject 1 but limited to expression cassettes encoding an HIV env polypeptide.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/31273

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/49 A61K48/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N A61K C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, STRAND, MEDLINE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 34640 A (MERCK & CO; SHIVER ET AL.) 13 August 1998 (1998-08-13) cited in the application claims 4,5; examples 3,4 ---	1-7
X	WO 96 09378 A (GENERAL HOSPITAL CORPORATION; SEED ET AL.) 28 March 1996 (1996-03-28) Nucleotides 360-1550 in SEQ ID NO:34 ---	11-23, 44,45
X	WO 97 31115 A (MERCK & CO, SHIVER ET AL.) 28 August 1997 (1997-08-28) example 11 --- -/--	11-23, 44,45



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

10 August 2000

Date of mailing of the international search report

13.09.00

Name and mailing address of the ISA

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Authorized officer

Cupido, M.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/31273

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
P,X	WO 99 41397 A (OXFORD BIOMEDICA LTD; KINGSMAN ET AL.) 19 August 1999 (1999-08-19) SEQ ID NO:2 example 2 ---	1-6, 11-23
E	WO 00 15819 A (CHILDRENS MEDICAL CENTER;GRAY ET AL.) 23 March 2000 (2000-03-23) SEQ ID NO:4,pHDMH ---	1-6
P,X	NOVITSKY VA ET AL: "Molecular cloning and phylogenetic analysis of human immunodeficiency virus type 1 subtype C: a set of 23 full-length clones from Botswana" JOURNAL OF VIROLOGY, vol. 73, no. 5, May 1999 (1999-05), pages 4427-4432, XP002144689 AMERICAN SOCIETY FOR MICROBIOLOGY US the whole document ---	41-66
A	ANDRÉ S ET AL: "INCREASED IMMUNE RESPONSE ELICITED BY DNA VACCINATION WITH A SYNTHETIC GP120 SEQUENCE WITH OPTIMIZED CODON USAGE" JOURNAL OF VIROLOGY,US,THE AMERICAN SOCIETY FOR MICROBIOLOGY, vol. 72, no. 2, 1 February 1998 (1998-02-01), pages 1497-1503, XP002073767 ISSN: 0022-538X cited in the application the whole document ---	1-66
A	SCHNEIDER R ET AL: "Inactivation of the human immunodeficiency virus type 1 inhibitory elements allows rev-independent expression of gag and gag/protease and particle formation" JOURNAL OF VIROLOGY, vol. 71, no. 7, July 1997 (1997-07), pages 4892-4903, XP002137891 AMERICAN SOCIETY FOR MICROBIOLOGY US cited in the application figure 1 -----	1-10

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9834640	A	13-08-1998	AU 6271198	A 26-08-1998
			CN 1252075	T 03-05-2000
			EP 0969862	A 12-01-2000
			NO 993810	A 07-10-1999
			PL 335050	A 27-03-2000

WO 9609378	A	28-03-1996	US 5786464	A 28-07-1998
			AU 3509995	A 09-04-1996
			CA 2200342	A 28-03-1996
			EP 0781329	A 02-07-1997
			JP 10506278	T 23-06-1998
			TR 960230	A 21-06-1996
			US 5795737	A 18-08-1998

WO 9731115	A	28-08-1997	AU 2124697	A 10-09-1997
			BG 102784	A 31-05-1999
			BR 9707672	A 13-04-1999
			CN 1216064	A 05-05-1999
			CZ 9802667	A 17-03-1999
			EP 0904380	A 31-03-1999
			HR 970092	A 30-04-1998
			HU 9901112	A 28-07-1999
			JP 2000505299	T 09-05-2000
			NO 983876	A 21-10-1998
			PL 328730	A 15-02-1999

WO 9941397	A	19-08-1999	AU 2527499	A 30-08-1999

WO 0015819	A	23-03-2000	AU 6139699	A 03-04-2000
